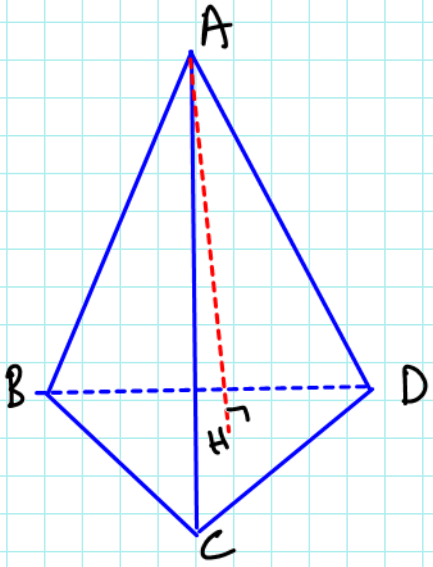
Volume et hauteur d'un tetraèdre

$$\mathcal{V}(ABCD) = \frac{1}{6}\left|(\vec{AB}\wedge\vec{AC})\cdot\vec{AD}\right|$$

$$= \frac{1}{6}\left|\det(\vec{AB},\vec{AC},\vec{AD})\right|$$

$$= \frac{B\times h}{3}$$

$$= \frac{\mathcal{A}(BCD)\times AH}{3}$$



d'où $$AH = \frac{3\,\mathcal{V}(ABCD)}{\mathcal{A}(BCD)} = d\left(A,(BCD)\right)$$

* Déterminant de 3 vecteurs.

$$\vec{u}\begin{pmatrix}1\\2\\3\end{pmatrix};\ \vec{v}\begin{pmatrix}1\\1\\-1\end{pmatrix}\text{ et }\vec{w}\begin{pmatrix}1\\-2\\1\end{pmatrix}$$

$$\det(\vec{u},\vec{v},\vec{w}) = \begin{vmatrix} 1 & 1 & 1\\ 2 & 1 & -2\\ 3 & -1 & 1\end{vmatrix}$$

MODE 6 1 1 1 = 1 = 1 = 2 = 1 = (−) 2 = 3 = (−) 1 = 1 = AC SHIFT 4 7 SHIFT 4 3 =

$$= +1\begin{vmatrix}1 & -2\\ -1 & 1\end{vmatrix} - 2\begin{vmatrix}1 & 1\\ -1 & 1\end{vmatrix} + 3\begin{vmatrix}1 & 1\\ 1 & -2\end{vmatrix}$$

$$= -1 - 4 - 9 = \boxed{-14}$$